(12) UK Patent Application (19) GB (11) 2 257 929 (13) A

(43) Date of A publication 27.01.1993

(21) Application No 9113224.1

(22) Date of filing 19.06.1991

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(51) INT CL[5]
B05D 1/36

(52) UK CL (Edition L)
B2E ECC ECD E1201 E1205 E1703 E417T E417U
E420T E420U E443T E448T
U1S S1707

(56) Documents cited
None

(58) Field of search
UK CL (Edition K) B2E
INT CL[5] B05D
On-line databases: W.P.I.

(54) Distressed paint finishes

(57) A method of producing decorative and/or protective distressed finishes on a variety of suitable substrates includes the steps of applying to the substrate by a powder coating process an initial opaque self-coloured base coat of polyester, epoxy or other suitable resin; baking the coated substrate to cause the base coat to melt and bond to the substrate; applying to the base coat an alcohol or water based stain or a powdered pearl suspension, to create a distressed effect and when to distress coat is dry applying thereto by a powder coating process a clear top coat of epoxy or polyester resin and baking the sprayed product to cause the top coat to melt and adhere to the distressed base coat.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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IMPROVEMENTS IN OR RELATING TO METHODS OF PRODUCING DISTRESSED PAINT FINISHES

My invention relates to decorative and/or protective coatings, especially those paint finishes known as distressed finishes, and to a method of producing them on various substrates, especially metal substrates.

Various finishes are known for protective and/or decorative purposes on a variety of substrates, and a type of finish popular at the present time is that known as a distressed finish. This types of finish creates a mottled effect of pleasing appearance and is very acceptable in a number of environments.

To date distressed finishes have been obtained by applying paints or stains to a substrate pre-coated by brush, roller or spray. Distressed paint finishes have not been obtainable on a substrate that has been both base coated by a powder coating process and has a finish or top coat that has been applied by a powder coating process, because the paint pigments generally used are not chemically compatible with powder coating compounds, such as polyesters and epoxies.

Oil base paints and water base paints if applied to powder coated substrates do not adhere sufficiently to be suitable for subsequent use and exposure in an environment where they will be touched or brushed against. Over a period of six months to a year, oil base paint may peel and detach itself from a powder coated substrate.

My invention allows the use of a powder coating process for the initial painting of the substrate, and for a clear protective coating over the distress finish.

I have discovered that various chemical stains and compounds, such as alcohol base stains and water base stains, are compatible with powder coating compounds and can be heated to the required temperatures for bonding powder coats to base coats and previously applied powder coating without discoloration or interfering significantly with the powder coat's adhesion to undercoats or the substrate.

These chemical stains and compounds can be applied to produce a distressed colour effect over a powder coated substrate. The longevity of these distressed finishes so

obtained is assured by covering them with a further protective layer of clear powder coat.

My invention can be used on a variety of substrates but it is often preferable to use steel, especially galvanised steel, as the final finish obscures the galvanising pattern. The product of my invention can be used in a variety of environments but, because of the materials used in the process, it is preferable that the coated product not be be used in environments where it is exposed to UV light, e.g. in unprotected exterior applications. The product of my invention is of particular application in shopfitting and in similar applications, for example in wall finishes in railway stations and other protected exterior situations. When used on sheet steel, the product of my invention has specific uses as a wall covering in damp and dirty situations, e.g. tunnel linings, etc. Other uses include office furniture, domestic appliances, biscuit tins and other metal containers.

My invention consists of the use of a multi-step powder coating process, to produce a distressed paint finish on a substrate. Briefly the powder coating process requires that the object to be coated is mounted or suspended in such a way that it is at ground (earth) potential, and that the powder to be sprayed is in a charged state, i.e. is at a higher potential than the object. Then, when the powder is sprayed in the direction of the object, the powder is attracted to the object because of the potential difference between them.

My invention includes three or more process steps and is characterised in that, to produce the distress effect, it uses wood stains and/or powdered pearl (ultra thin flakes of mica coated with metal oxides such as titanium oxide and iron oxide: the flakes can split light up into its component colours). In two specific examples of the process of my invention the process is as follows:

1) The object to be treated is coated with an initial opaque self-coloured base coat of, e.g. polyester, epoxy or the like, by powder coat spray technique using fine particles of polyester or epoxy, and this base coat is then baked at about 180—200°C to melt and produce a continuous coating adhering to the substrate.

   The baked coating is then covered with an alcohol or water based stain by spraying or sponging and, if desired, further distressing is obtained by

splattering with pure alcohol or water.

A top coat of epoxy or polyester is then applied by powder coating spray technique and baked at a temperature of 180—200°C to produce a hardened finish.

2) As distinct from the 3 or 4 step process, the object to be treated is given an initial opaque self coloured base consisting of either 95% polyester or epoxy or the like plus 5% powdered pearl (as above). This base coat is then baked at 180—200°C.

The baked coating is then covered with a subsequent layer consisting of 95% clear polyester or epoxy plus 5% powdered pearl (as above). This second coat is then also baked at 180—200°C.

The pearl powder containing coating of my invention is useful in all applications, not only internally, whereas the other coatings will deteriorate on exposure to UV light.

The process of my invention is an improvement over conventional distressed painting techniques for metal in that the powder coat base can be applied into recesses or onto shapes difficult or impossible to reach with conventional sprays. Also a far more durable coating for distress effects is possible with powder coat than with conventional air-drying paints applied by conventional means.

CLAIMS

1. A method of producing distressed paint finishes which comprise applying to a substrate by a powder coating process an initial opaque self-coloured base coat of epoxy or polyester resin, baking the coated substrate to melt the base coat and cause it to adhere to the substrate. Applying to the baked base coat a distress coat [of an alcohol or water based stain, or a powdered pearl suspension], and, after the distressed paint has dried, applying thereto by a powder coating process a clear top coat of epoxy or polyester resin and baking the coated body to cause the top coat to melt and adhere to the distressed base coat.

2. A method according to claim 1 in which the distress coat consists of an alcohol or water based stain.

3. A method according to claim 1 in which the distress coat consists of a suspension of powdered pearl in alcohol.

4. A method of producing distressed paint finishes which comprises applying to a substrate by a powder coating process an initial opaque self-coloured base coat consisting of a resin and powdered pearl, baking the coated substrate to melt the base coat and cause it to adhere to the substrate and then covering the baked substrate and base coat with another layer of clear resin and powdered pearl and baking the coated object yet again to melt the top layer and cause it to adhere to the base coat.

5. A method according to claim 4 in which the applied coats comprise 95% clear resin and 5% powdered pearl.

6. A method according to any of the preceding claims in which the substrate is steel.

7. A method according to claim 6 in which the steel is galvanised steel.

8. A method according to claims 1 - 5 in which the substrate is a metal other than steel.

9. Distressed finishes produced by the methods given in any of the preceding claims.

10. Distressed finishes produced according to the examples given herein.

11. Methods of producing distressed finishes according to the examples given herein.

12. Methods of producing distressed finishes substantially as described herein and according to the examples.

13. Metal objects having a distressed finish produced according to the methods described herein.

14. Shopfittings having a distressed finish produced according to the methods described herein.

15. Wall panels and linings having a distressed finish produced according to the methods described herein.

16. Wall panels and linings according to claim 15 in which the substrate is galvanised steel.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number
GB 9113224.1

Relevant Technical fields

(i) UK Cl (Edition K) B2E

(ii) Int Cl (Edition 5) B05D

Search Examiner
V.V. BAILEY-WOOD

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Date of Search
20.10.92.

Documents considered relevant following a search in respect of claims 1-16

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

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A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

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Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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